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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

APPELLANTS' MAIN BRIEF ON APPEAL

APPELLANTS: Yoshimasi Saitoh et al. OLD DOCKET NO.: P99,2475  
NEW DOCKET NO.: 09792909-4457  
SERIAL NO.: 09/496,656 GROUP ART UNIT: 1772  
DATE FILED: February 3, 2000 EXAMINER: Sow Fun Hon  
INVENTION: "METHOD OF FABRICATING LIQUID CRYSTAL DISPLAY  
DEVICE, AND LIQUID CRYSTAL DISPLAY DEVICE"

Mail Stop Appeal Brief - Patents  
Hon. Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

Appellants submit herewith Appellants' Main Brief on Appeal under 37 C.F.R. §41.37 in support of the Notice of Appeal mailed on September 22, 2006. The Commissioner is hereby authorized to charge the amount of \$500.00 for the requisite filing fee for filing the Main Brief on Appeal to the Appellants' Attorneys' credit card. Credit Card payment for the fee is made via the electronic submission process.

Appellants filed a Pre-Appeal Brief Request for Review on September 22, 2006. In response, the reviewing panel issued a Notice of Panel Decision from Pre-Appeal Brief Review on October 23, 2006, which stated that the case should proceed to the Board of Patent Appeals and Interferences. Therefore, Appellants file this Main Brief on Appeal.

This Main Brief on Appeal is mailed within one month of the Notice of Panel Decision from Pre-Appeal Brief Review dated October 23, 2006.

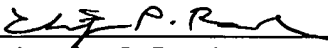
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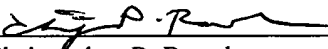
The Commissioner is hereby authorized to charge any deficiency in fees associated with this communication or credit any overpayment to Deposit Account No. 19-3140. A duplicate copy of this sheet is enclosed.

Respectfully Submitted,

 (Reg. No. 45,034)  
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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited as First Class Mail in an envelope addressed to Mail Stop Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on November 24, 2006 (day after Thanksgiving holiday).

 (Reg. No. 45,034)  
Christopher P. Rauch



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

**APPELLANT'S MAIN BRIEF ON APPEAL**

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Commissioner for Patents  
P.O. Box 1450  
Alexandria, Virginia 22313-1450

Dear Sir:

In accordance with the provisions of 37 C.F.R. §41.37, Appellants submit this Main Brief on Appeal pursuant to the Notice of Appeal mailed on September 22, 2006 in the above-identified application.

**I. REAL PARTY IN INTEREST:**

The real party in interest in the present appeal is the Assignee, Sony Corporation. The assignment was recorded in the U.S. Patent and Trademark Office at Reel 010583, Frame 0304.

**II. RELATED APPEALS AND INTERFERENCES:**

Appellants filed a Pre-Appeal Brief Request for Review and accompanying Arguments on September 22, 2006. In response, the reviewing panel issued a Notice of Panel Decision from Pre-Appeal Brief Review on October 23, 2006, which stated that the case should proceed to the Board of Patent Appeals and Interferences. Therefore, Appellants file this Main Brief on Appeal.

Appellants are not aware of any related appeals or interferences.

### **III. STATUS OF CLAIMS:**

Claims 1-11 and 13 are pending in the application.

Claims 1-7 are withdrawn from consideration as being directed to a non-elected invention.

The present appeal is directed to claims 8-11 and 13, which were finally rejected in an Office Action dated June 22, 2006.

A copy of claims 1-11 and 13 is appended hereto as the Claims Appendix.

The status of the claims on appeal is as follows:

Claims 8-11 and 13 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Gibbons* (U.S. Patent No. 6,307,609) ("Gibbons") in view of *Park* (U.S. Patent No. 5,998,101) ("Park.")

### **IV. STATUS OF AMENDMENTS:**

All amendments have been entered in this application.

### **V. SUMMARY OF CLAIMED SUBJECT MATTER:**

Claims 1-11 and 13 are currently pending. Claims 1-7 are withdrawn from consideration as being directed to a non-elected invention. Claims 8-11 and 13 are under consideration. Claim 8 is the only pending independent claim under consideration. Claims 9-11 and 13 depend directly or indirectly from claim 8.

The claimed invention generally relates to a liquid crystal display device. (Page 1, lines 6-10; claim 8). The liquid crystal display device includes a pair of transparent substrates that are aligned with a predetermined distance therebetween. (Page 5, lines 12-13). At least one of the transparent substrates has thereon a film for liquid crystal orientation. (Page 5, lines 14-15). A liquid crystal layer is located between the substrates. (Page 5, lines 12-13).

Referring to Figure 2 as an illustrative example, the film is a UV-reactive film. (Page 5, lines 19-21; page 6, lines 6-12). The film is exposed to first polarized UV rays while the film is on the substrate aligned parallel to a reference plane (left-hand image of Figure 2), and next to second polarized UV rays after the substrate is rotated on the reference plane (right-hand image of Figure 2). (Page 9, line 20 - page 10, line 24). The first polarized UV ray exposure controls the intended liquid crystal orientation, then the substrate is rotated on the reference plane, and the second polarized UV ray exposure controls the pre-tilt angle of the liquid crystal. (Page 3, lines 12-23).

The liquid crystal display device has a contrast ratio greater than or equal to 138 effected by the exposure to the first polarized UV rays and the second polarized UV rays. (Page 11, line 24 - page 12, line 13). The liquid crystal display device has a pre-tilt angle greater than or equal to 3.5° effected by the exposure to the first polarized UV rays and the second polarized UV rays. (Page 11, line 24 - page 12, line 13). The ratio of the exposure energy during the first polarized UV rays exposure to that of the second polarized UV rays exposure is 5:1. (Page 10, lines 10 and 15).

Claims 9-11 and 13 depend directly or indirectly from claim 8.

#### **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL:**

Claims 8-11 and 13 are rejected under 35 U.S.C. §103(a) as being unpatentable over *Gibbons* (U.S. Patent No. 6,307,609) (“*Gibbons*”) in view of *Park* (U.S. Patent No. 5,998,101) (“*Park*.”)

#### **VII. ARGUMENT:**

As set forth below, claims 8-11 and 13 are not unpatentable under 35 U.S.C. §103(a) based on the teachings of *Gibbons* in view of *Park*. Appellants respectfully submit that the Examiner’s assertions are incorrect as a matter of fact and law. Thus, for the reasons set forth below, Appellants respectfully request that this Board reverse the rejection of claims 8-11 and 13 under 35 U.S.C. §103(a) as being unpatentable based on the teachings of *Gibbons* in view of *Park*.

*Gibbons* in view of *Park* fails to disclose or suggest a ratio of exposure energy during a first polarized UV rays exposure to that of a second polarized UV rays exposure of 5:1. Unlike *Gibbons* in view of *Park*, Appellants’ claimed invention includes a ratio of exposure energy during a first polarized UV rays exposure to that of a second polarized UV rays exposure of 5:1. (Claim 8).

As acknowledged by the Examiner, *Gibbons* fails to disclose Appellants’ claimed ratio of exposure energies of 5:1. (*Office Action of 6/22/2006*, page 3). Instead, *Gibbons* teaches exposure energy ratios of 4:1 or less. Specifically, *Gibbons* teaches the following ratios: Example 3 ratio 4:1 (*Gibbons* 12:25); Example 4 ratio 1:4 (*Gibbons* 12:49); Example 5 ratio 4:1 (*Gibbons* 13:6); Example 6 ratio 1:4 (*Gibbons* 13:29); Example 9 ratio 600mJ:892mJ (*Gibbons* 14:53-55); Example 10 ratio 790mJ:405mJ (*Gibbons* 15:12-14); Example 13 ratio 4:1 (*Gibbons*

16:33); Example 14 ratio 4:1 (*Gibbons* 17:13); and Example 15 ratio 4:1 (*Gibbons* 17:59). Thus, *Gibbons* fails to disclose an exposure energies ratio of 5:1.

The Examiner argues that *Gibbons* suggests Appellants' claimed exposure energy ratio of 5:1. Appellants disagree. As described above, *Gibbons* fails to disclose an exposure energy ratio greater than 4:1. Further, nowhere does *Gibbons* suggest using an exposure energy ratio greater than 4:1.

The Examiner argues that it would have been obvious to increase *Gibbons*' ratio to 5:1 in order to provide a pre-tilt angle greater than or equal to 3.5. *Office Action of 6/22/2006*, page 4. Appellants disagree. *Gibbons* teaches 16 cases, and in none of these cases does *Gibbons* describe a particular pre-tilt angle, let alone how an exposure energy ratio can effect a particular pre-tilt angle. Further, *Gibbons* also fails to name a particular pre-tilt angle in its Summary of the Invention and Detailed Description. The only place that *Gibbons* mentions a pre-tilt angle value is in its Background of the Invention, in which *Gibbons* generally states that known devices can have a pre-tilt angle of about 2-15 degrees. *Gibbons* 1:44. As *Gibbons* fails to even discuss how an exposure energy ratio can effect a particular pre-tilt angle, it would not have been unreasonable for one having skill in the art to assume, based on the teaching of *Gibbons* that, in *Gibbons*' 16 examples, the pre-tilt angle is only about 2 degrees. In any event, *Gibbons* fails to teach or suggest how to effect a particular pre-tilt angle via an exposure energy ratio.

The Examiner has used impermissible hindsight to allege that it would have been obvious to increase *Gibbons*' ratio to 5:1 to achieve a pre-tilt angle of 3.5 or greater. Nowhere does *Gibbons* suggest how to achieve a pre-tilt angle, let alone a pre-tilt angle of 3.5 or greater. And nowhere does *Gibbons* suggest that increasing *Gibbons*' exposure energies ratio greater than 4:1 will result in a pre-tilt angle of 3.5. In fact, *Gibbons* fails to even discuss how to use a particular exposure energy ratio to achieve a particular pre-tilt angle.

Therefore, *Gibbons* fails to disclose or suggest Appellants' claimed ratio of 5:1.

*Park* fails to discuss a ratio of exposure energies during a first polarized UV rays exposure to that of a second polarized UV rays exposure. Further, *Park* fails to teach or suggest how to effect a particular pre-tilt angle via an exposure energy ratio. Therefore, *Gibbons* in view of *Park* still fails to disclose or suggest Appellants' claimed exposure energies ratio of 5:1.

For at least these reasons, *Gibbons* in view of *Park* fails to disclose or suggest claim 8.

Claims 9-11 and 13 depend directly or indirectly from claim 8 and are therefore allowable for at least the same reasons that claim 8 is allowable.

Appellants respectfully request that the Board reverse the rejection.

**VIII. CONCLUSION:**

For the foregoing reasons, Appellants respectfully submit that the rejections posed by the Examiner are improper as a matter of law and fact. Accordingly, Appellants respectfully request the Board reverse the rejections of claims 8-11 and 13.

Respectfully submitted,

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## **CLAIMS APPENDIX**

1. (Withdrawn) A method of fabricating a liquid crystal display device with liquid crystal sandwiched between a pair of transparent substrates and with a film for liquid crystal orientation formed on at least one transparent substrate adjacent to the liquid crystal, the method comprising;

a step of forming a UV-reactive film for liquid crystal orientation on at least one transparent substrate,

a step of applying first polarized UV rays to the film,

a step of rotating the substrate on a reference plane, and

a step of applying second polarized UV rays to the film.

2. (Withdrawn) A method of fabricating a liquid crystal display device with liquid crystal sandwiched between a pair of transparent substrates and with a film for liquid crystal orientation formed on at least one transparent substrate adjacent to the liquid crystal, the method comprising;

a step of forming a UV-reactive film for liquid crystal orientation on at least one transparent substrate,

a step of applying first polarized UV rays to the film on the substrate that is aligned parallel to a reference plane for controlled liquid crystal orientation,

a step of rotating, on the reference plane, the substrate having thereon the film exposed to the first polarized UV rays, in such a manner that the liquid crystal orientation having been controlled in a predetermined direction in the first polarized UV ray exposure step may turn in a direction that differs from its predetermined direction, and

a step of applying second polarized UV rays to the film for pre-tilt angle expression.

3. (Withdrawn) The method of fabricating a liquid crystal display device as claimed in claim 1 or 2, wherein the rotation angle in the step of rotating the substrate is 90 degrees.

4. (Withdrawn) The method of fabricating a liquid crystal display device as claimed in any one of claims 1 to 3, wherein the angle of the first UV exposure falls between 50 and 90 degrees relative to the reference plane.



5. (Withdrawn) The method of fabricating a liquid crystal display device as claimed in any one of claims 1 to 4, wherein the angle of the second UV exposure falls between 50 and 80 degrees relative to the reference plane.

6. (Withdrawn) The method of fabricating a liquid crystal display device as claimed in any one of claims 1 to 5, wherein the ratio of the dose of the first UV exposure to that of the second UV exposure falls between 100/1 and 1/1.

7. (Withdrawn) The method of fabricating a liquid crystal display device as claimed in any one of claims 1 to 6, wherein the light source of the polarized UV rays is a non-electrode discharge-type UV lamp.

8. (Previously Presented) A liquid crystal display device comprising a pair of transparent substrates being aligned via a predetermined distance therebetween with at least one of them having thereon a film for liquid crystal orientation, and a liquid crystal layer put in the distance between the substrates, wherein

the film is a UV-reactive film, and is exposed to first polarized UV rays while the film is on the substrate aligned parallel to a reference plane, and next to second polarized UV rays after the substrate is rotated on the reference plane, and

wherein the liquid crystal display device has a contrast ratio greater than or equal to 138 effected by the exposure to the first polarized UV rays and the second polarized UV rays,

wherein the liquid crystal display device has a pre-tilt angle greater than or equal to 3.5° effected by the exposure to the first polarized UV rays and the second polarized UV rays, and

wherein the ratio of the exposure energy during the first polarized UV rays exposure to that of the second polarized UV rays exposure is 5:1.

9. (Original) The liquid crystal display device as claimed in claim 8, wherein the substrate rotation angle is 90 degree.

10. (Original) The liquid crystal display device as claimed in claim 8 or 9, wherein the angle of the first UV exposure falls between 50 and 90 degrees relative to the reference plane.

11. (Original) The liquid crystal display device as claimed in any one of claims 8 to 10, wherein the angle of the second UV exposure falls between 50 and 80 degrees relative to the reference plane.

12. (Canceled).

13. (Original) The liquid crystal display device as claimed in any one of claims 8 to 12, wherein the light source of the polarized UV rays is a non-electrode discharge-type UV lamp.

### **EVIDENCE APPENDIX**

Appellants do not submit additional evidence with this appeal brief and no additional evidence has been submitted during prosecution.

**RELATED PROCEEDINGS APPENDIX**

Appellants are not aware of any related appeals or interferences with regard to the present application.